and into the inner cannula main lumen proximal of any tissue samples which may have been collected.

Inner cannula is also optionally provided with aspiration regulator 228, which is positioned in recess 226. Recess 226 is provided to allow aspiration regulator 228 to slide between inner cannula 116 and outer cannula 152 to selectively cover or uncover portions of screens 216 and 224. In yet another embodiment, neither recess 226 nor aspiration regulator 228 is provided, in which embodiment vapor aspiration is regulated by regulating only the vacuum applied to main lumen 122. In the embodiment illustrated in Figures 7 and 8, aspiration regulator 228 includes a curved plate 230 and an actuation member 232 extending proximally from the curved plate. Curved plate 230 is curved to conform to the outer diameter of inner cannula 116 in recess 226. By moving actuation member 232 proximally and distally, the number of openings 234 which can fluidly communicate with openings 218 is controlled, thereby regulating the strength of aspiration through screen 216 and screen 224 when vacuum is applied to main lumen 122.

A method of operating the above-described apparatus for collecting tissue samples will now be described with reference to Figures 9-14, and with reference to Table 1 below. Table 1 describes the status of several of the elements of system 100 during use thereof.

TABLE 1

STEP	MODE OF OPERATION	RF ENERGY		VACUUM SOURCE	TISSUE CHANNEL
		TIP	LOOP		
1	Initial entry into tissue until located	ON	OFF	OFF	CLOSED
2	Opening of Tissue Channel	OFF	OFF	OFF	OPENING
3	Deployment of Cutting Wire	OFF	ON	OFF	OPEN
4	Closing of Tissue Channel	OFF	OFF	OFF	CLOSING
5	Distal Cutting of Tissue	OFF	ON	ON	CLOSED
6	Opening of Tissue Channel	OFF	OFF	ON	OPENING
7	Detachment of Tissue	OFF	ON	ON	OPEN
8	Closing of Tissue Channel	OFF	OFF	ON	CLOSING
9	Retrieval of Tissue Sample and Resetting of Cutting Wire Position	OFF	OFF	ON	CLOSED

In Table 1, the column labeled "Tip" refers to whether RF generator 106 is activated to apply RF energy to cutting wire 202, "Loop" refers to whether RF generator 106 is activated to apply RF energy to cutting loop 138, 176, 182, and/or 186, and the status of the "Tissue Channel" refers to the radial alignment of cutouts 124, 162: when the cutouts are radially aligned, an open "tissue channel" is formed into cannula 102 through both cutouts, and when the cutouts are not radially aligned, the tissue channel is closed.

Figure 9 illustrates the distal end of cannula 102 in a condition to be inserted into tissue to be sampled. The tissue channel in the fully closed position; inner cannula 116 is visible through cutout 162, but cutout 124 is not radially aligned with cutout 162. End plug 194 (or 212, if desired) has been mounted on the distal end of the inner cannula or the outer cannula. As stated in Table 1 above, step 1 proceeds with the advancement of cannula 102 into the tissue with RF energy being applied to cutting wire 202, which allows cannula 102 to be easily advanced into the tissue to the

target site. Once the target site has been accessed, as assessed by measuring the advancement of the cannula into the tissue and comparing with prior measurements, or by ultrasound, MRI, X-ray, or other imaging devices, outer cannula 152 is caused to rotate relative to inner cannula 116. This relative rotation, step 2 above, is continued until the tissue channel is completely open, i.e., the maximum overlap between cutouts 124 and 162 (corresponding to the smaller of angles α and β). This orientation is illustrated in Figure 10, wherein cutting loop 138 is also illustrated. Cutting loop 138 is in a retracted position, during insertion of cannula 102 into the tissue and the relative rotation of the inner and outer cannulae, which shields the patient from premature exposure to the cutting wire 136.

Step 3 above is then commenced, wherein cutting wire 136, including cutting loop 138, is rotated around longitudinal axis 148, which causes the cutting loop to pass through both cutouts 124, 162 and into the tissue into which cannula 102 has been inserted. During rotation of cutting loop 138, RF energy is allowed to flow to cutting loop 138, so that the cutting loop cuts tissue as it rotates. Cutting loop 138 is rotated until it is entirely out of cannula 102, thus forming a first, planar cut in the tissue to be sampled. Application of RF energy through cutting loop 138 is then ceased.

In step 4, outer cannula 152 is rotated to close the tissue channel, except for a small slot 236 between a sidewall of cutout 124 and a sidewall of cutout 162 which is present because cutting wire 136 still extends through the cutouts, and prevents the outer cannula from rotating to completely close the tissue channel. This stage is illustrated in Figure 11. The vacuum source is then preferably activated to begin drawing tissue close to cannula 102, and in particular toward slot 236. If it is necessary to draw the tissue closer to cannula 102, vacuum source 108 can be adjusted to increase the negative pressure applied through lumen 122. Alternatively, slot 236